

# HERMAPHRODITISM IN A MOUSE RELATED TO STRAIN A<sup>1</sup>

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Although mice have been used extensively in research, few instances of lateral hermaphroditism have been reported in this species since Danforth first observed a gynandromorph in 1927 (Blotevogel, 1932; Fekete, 1937; Fekete and Newman, 1944; Hooker and Strong, 1944; Klein, 1955). The hermaphrodite last described (Klein, 1955) was discovered at autopsy in an albino mouse related to strain A/He. Recently, the author had occasion to repair a right inguinal hernia in an animal from the same colony. Inguinal hernias have been observed previously in association with hermaphroditism (Young, 1937; Grollman, 1947). When the mouse was anesthetized and the abdominal cavity entered, it was observed that the animal, which externally was indistinguishable from other males, had a testis on the left side but none on the right. The testis was located in the scrotum and although small, appeared in good condition. A vesicular and coagulating gland also were present on the left side. However, an ovary-like structure was discovered on the opposite side caudad to the right kidney. Associated with the latter gonad was a well developed uterine horn which measured 2 - 3 mm. in diameter. A firm 5 x 7 mm. mass was attached to the base of this horn and appeared outwardly to represent a rudiment of the left uterine horn. Following these observations, the hernia was repaired and the animal isolated for further study.

One week following the operation, the mouse was mated to a group of young adult non-virgin mice and the latter were inspected daily for evidence of mating. No vaginal plugs were observed during the two months which followed and no pregnancies ensued. In an attempt to induce pregnancy in the hermaphrodite, a viable sperm preparation was introduced into the cephalic end of the right uterine horn on five successive days. The mouse died several days thereafter and the genital tract was excised and fixed. Serial or semi-serial sections were prepared in some instances.

The following details were revealed upon microscopic examination:

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I. *Testis and Male Sex Accessories.* The seminiferous tubules were compact and appeared well developed. Cells in all stages of spermatogenesis including spermatozoa were found in the tubules. The vas deferens contained a well folded mucosa which was lined with a tall columnar epithelium. There were fewer folds than normal in the mucosa of the vesicular gland and these generally projected but slightly into the lumen. A coagulating gland adjoined the vesicular gland and contained a well folded mucosa composed of tall columnar cells in good condition. Both ventral and dorsal prostates were observed and the tubules of each appeared normal.

II. *Ovary and Femal Sex Accessories.* Microscopic examination disclosed the right gonad to be an ovary. The germinal epithelium was intact and invaded the stroma in places. Granulosa cells, occasionally in glandular arrangement, were observed throughout the ovary while follicles were almost entirely absent. The gonad contained an abundance of interstitial tissue with large and frequently deeply pigmented cells. The uterus contained a slightly folded mucosa with columnar to tall columnar cells. Secretion, desquamated cells, leucocytes, cellular debris, and spermatozoa were found within the lumen. The globular mass at the base of the right uterine horn contained a large lumen which joined the lumen of the right horn and was lined with a stratified squamous epithelium similar to that in the vagina. No passageway was found between the lower end of the uterine tract and the urethra.

Microscopic examination of the adrenals and kidneys, in each instance, revealed structures indicative of the male rather than the female (Crabtree, 1941; Howard Miller, 1927). Thus the zona fasciculata and zona reticularis of the adrenals were not separable and the cells lining the parietal layer of Bowman's capsule in the kidneys were cuboidal to low columnar.

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